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Chief IP Counsel
Bridgestone Americas Holding, Inc.
1200 Firestone Parkway
Akron, OH 44317

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| EXAMINER |
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MERKLING, MATTHEW J

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PAPER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/799,565
Filing Date: March 11, 2004
Appellant(s): ROGGEMAN ET AL.

Nathan T. Lewis
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/6/08 appealing from the Office action mailed 1/4/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on 3/4/08 has not been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

Claims 27 and 28 contain(s) substantial errors as presented in the Appendix to the brief. The after-final amendments of 3/4/08 were not entered into the record. The correct version of the claims were submitted on 10/30/07. The correct copy of the claims is attached in the appendix to this action.

(8) Evidence Relied Upon

| | | |
|----------------|------------|---------|
| 5,650,128 | Holst | 7-1997 |
| JP 05-171164 A | Okada | 7-1993 |
| 5,446,223 | Smith, Jr. | 8-1995 |
| 5,123,836 | Yoneda | 6-1992 |
| 4,705,654 | Niwa | 11-1987 |
| 6,111,034 | Goode | 8-2000 |
| 4,847,207 | Birks | 7-1989 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 17, 18, 20, 21, 26-29, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada (JP 05-171164).

Regarding claim 17, Okada discloses an apparatus for humidifying a hydrocarbon stream (paragraph 8) comprising:

- a vessel (Drawing 1, (4)) which defines an interior cavity and having an inlet (2) adjacent a lower end of the cavity for receiving a hydrocarbon stream (paragraph 15);
- a bed of a packing material (8) in the cavity; and
- water filling at least a portion of the bed (paragraph 15); and
- a disengagement zone (area above spray nozzle, 9).

Regarding limitations recited in claim 1 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or

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article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Regarding claim 18, Okada further discloses a second inlet (11) in the vessel for adding water to the vessel (paragraph 15).

Regarding claim 20, Okada further discloses:

a mixer (6) for mixing the humidified hydrocarbon stream with an unhumidified hydrocarbon stream to form a combined stream (paragraph 15, Drawing 1); and

a sensor (7) for detecting a moisture content of at least one of the unhumidified hydrocarbon stream and the combined stream (paragraph 15).

Regarding claim 21, Okada further discloses an outlet through which the humidified hydrocarbon stream exits the vessel (see Drawing 1).

Regarding claim 26, Okada further discloses a source of the hydrocarbon stream fluidly connected with the inlet (see Drawing 1).

Regarding claim 27 and 28, the composition of the fluid entering the vessel does not add any structure to the claimed apparatus (see MPEP 2115), and therefore the claim continues to read on the device of Okada.

Regarding claim 29, Okada illustrates a head space in the vessel above the bed and the water to allow liquid water to separate from the gas stream (see Drawing 1).

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Regarding claim 34, Okada, as discussed in claim 17 above, further discloses a second vessel (6, see Drawing 1) “coupled” to the inlet (via conduit 3).

Regarding limitations recited in claim 34 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Claims 31, 36 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Holst et al. (US 5,650,128).

Regarding claims 31 and 36, Holst discloses an apparatus comprising:

a vessel (12) which defines an interior cavity and having an inlet (20 or 30) adjacent a lower end of the cavity (see Fig. 1) and an outlet (28) adjacent an upper end of the cavity (see Fig. 1);

a bed of a packing material (14) in the cavity, the packing material comprising particles which are larger in size toward an upper end of the bed (see FIG. 1 and col. 9 lines 57-61);

and a head space (above packed bed 14, and below outlet 28, see Fig. 1) which spaces the outlet from the packing material; and

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a disengagement zone (above packed bed 14, and below outlet 28, see Fig. 1).

Regarding limitations recited in claims 31, 36 and 40 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 17 above, and further in view of Smith, Jr. (US 5,446,223).

Regarding claim 19, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach a return line for returning a portion of a hydrocarbon stream which has been humidified to the cavity.

Smith also discloses an apparatus for the processing and subsequent measuring of a process variable.

Smith teaches a return line from the effluent line to the processing vessel (alkylation reactor) in order to reprocess the stream and control the olefin content of the effluent stream below a certain limit (col. 8 lines 59-64).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to use the return line structure of Smith in the humidification apparatus of Okada in order to control the humidification content of the effluent stream.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 17 above, and further in view of Yoneda et al. (US 5,123,836).

Regarding claim 25, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach the packing material comprising porcelain.

Yoneda also discloses an apparatus for gas/liquid contact.

Yoneda teaches the use of porcelain as a packed bed in order to efficiently conduct gas-liquid contact (col. 16 lines 49-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the porcelain packing material of Yoneda in the humidifying apparatus of Okada in order to efficiently conduct gas-liquid contact.

Claims 22-24, 31 and 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) in view of Holst et al. (US 5,650,128).

Regarding claims 22 and 23, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach the packing material is in the form of particles that are smaller adjacent a bottom of the bed than adjacent a top of the bed.

Holst also discloses a device for contacting a fluid stream with packing material.

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Holst teaches particles on the bottom of the bed having a smaller diameter than particles on the top of the bed (see Fig. 1) in order to thoroughly mix the two components prior to reaching the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics (col. 9 lines 57-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the smaller particles below the larger particles, as in Holst, in the packing bed of Okada in order to thoroughly mix the two components prior to reaching the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics.

Regarding claim 24, it was well known in the art at the time of the invention that the size of the particles in the packing material has significant effect on the fluid distribution and mixing of the fluids in the vessel (Holst col. 12 lines 8-24), the size of the particles is not considered to confer patentability to the claim, as the size of the particles is a variable that can be modified, as is taught by Holst, to alter the flow distribution and mixing, the size of the particles would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed size of the particles cannot be considered critical.

Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the size of the particles in the modified Okada to obtain the desired mixing and flow distribution (In re Boesch, 617 F. 2d. 272,205 USPQ 215 (CCPA 1980)). Since it has been held that where general conditions

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of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 223).

Regarding claim 31, Okada discloses a humidification apparatus comprising:

a vessel (4) which defines an interior cavity and having an inlet (2) adjacent a lower end of the cavity and an outlet adjacent an upper end of the cavity (see Drawing 1);

a bed of a packing material (8) in the cavity, the packing material comprising particles which are larger in size toward an upper end of the bed;

water filling a portion of the bed (paragraph 15); and

a head space (see Drawing 1) which spaces the outlet from the water and the packing material; and

a disengagement zone (area above spray nozzle, 9).

Okada fails to teach the packing material comprising particles which are larger in size toward an upper end of the bed.

Holst also discloses a device for contacting a fluid stream with packing material.

Holst teaches particles on the bottom of the bed having a smaller diameter than particles on the top of the bed (see Fig. 1) in order to thoroughly mix the two components prior to reaching the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics (col. 9 lines 57-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the smaller particles below the larger particles, as in Holst, in the packing bed of Okada in order to thoroughly mix the two components prior to reaching

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the larger particles and to allow the processing rate to be turned up or down without regard to fluid mechanics.

Regarding claim 32, Okada, as discussed in claim 31 above, further discloses a liquid level gauge for adjusting the height of the water (paragraph 15).

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 17 above, and further in view of Niwa et al. (4,705,654).

Regarding claim 30, Okada, as discussed in claim 17 above, discloses all of the claim limitations, but fails to teach the particles are spherical.

Niwa also discloses an apparatus for humidification of a stream.

Niwa teaches spherical material (e.g. balls) are effecting packing material for a humidifying device (col. 5 lines 66-68).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the spherical packing material of Niwa with the humidification apparatus of Okada to utilize the effectiveness of spheres in humidification devices.

Claims 33, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) in view of Goode et al. (US 6,111,034).

Regarding claims 33, 38 and 39, Okada discloses an apparatus for humidifying a hydrocarbon stream comprising:

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a vessel (4) which defines an interior cavity, the vessel comprising a first inlet (2) adjacent a lower end of the cavity for receiving a hydrocarbon stream, a second inlet (11) for adding water to the vessel, and an outlet (see Drawing 1);

a bed (8) in the cavity, the bed comprising a packing material (paragraph 15) and water which fills a portion of the bed (paragraph 15); and

a head space (disengagement zone) in the cavity (see Drawing 1) above the bed which allows liquid water to fall out of the hydrocarbon stream.

Regarding limitations recited in claims 33, 38 and 39 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Claims 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 17 above, and further in view of Goode et al. (US 6,111,034).

Regarding claim 35, Okada, as discussed in claim 17 above teaches a method of selectively humidifying a hydrocarbon by contacting the hydrocarbon with water in a vessel and subsequently disengaging (demisting) the free water from the humidified

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hydrocarbon, but does not teach the end use of said humidified hydrocarbon in a polymerization reactor.

Goode also discloses a process that requires the humidification of a hydrocarbon (monomer).

Goode teaches a polymerization process that requires the introduction of a controlled amount of water to a hydrocarbon (see col. 8 lines 51-55) by contacting the hydrocarbon with water in a vessel and subsequently demisting it prior to introduction into the polymerization reactor (see col. 8 lines 51-66) as a preferable way of introducing controlled amounts of humidity into a monomer.

As such, it would have been obvious to one of ordinary skill in the art to change the end use of the humidified hydrocarbon of Okada, and direct the humidified hydrocarbon to a polymerization reactor, as taught by Goode, as a preferable way of introducing controlled amounts of humidity into a hydrocarbon.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) and Holst et al. (US 5,650,128) as applied to claim 31 above, and further in view of Goode et al. (US 6,111,034).

Regarding claim 37, modified Okada, as discussed in claim 31 above teaches a method of selectively humidifying a hydrocarbon by contacting the hydrocarbon with water in a vessel and subsequently disengaging (demisting) the free water from the humidified hydrocarbon, but does not teach the end use of said humidified hydrocarbon in a polymerization reactor.

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Goode also discloses a process that requires the humidification of a hydrocarbon (monomer).

Goode teaches a polymerization process that requires the introduction of a controlled amount of water to a hydrocarbon (see col. 8 lines 51-55) by contacting the hydrocarbon with water in a vessel and subsequently demisting it prior to introduction into the polymerization reactor (see col. 8 lines 51-66) as a preferable way of introducing controlled amounts of humidity into a monomer.

As such, it would have been obvious to one of ordinary skill in the art to change the end use of the humidified hydrocarbon of Okada, and direct the humidified hydrocarbon to a polymerization reactor, as taught by Goode, as a preferable way of introducing controlled amounts of humidity into a hydrocarbon.

Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (JP 05-171164) as applied to claim 21 above, and further in view of Goode et al. (US 6,111,034) and Birks et al. (US 4,847,207).

Regarding claims 41 and 42, Okada, as discussed in claim 21 above, teaches a method of selectively humidifying a hydrocarbon by contacting the hydrocarbon with water in a vessel and subsequently disengaging (demisting) the free water from the humidified hydrocarbon, but does not teach the end use of said humidified hydrocarbon in a polymerization reactor.

Goode also discloses a process that requires the humidification of a hydrocarbon (monomer).

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Goode teaches a polymerization process that requires the introduction of a controlled amount of water to a hydrocarbon (see col. 8 lines 51-55) by contacting the hydrocarbon with water in a vessel and subsequently demisting it prior to introduction into the polymerization reactor (see col. 8 lines 51-66) as a preferable way of introducing controlled amounts of humidity into a monomer.

As such, it would have been obvious to one of ordinary skill in the art to change the end use of the humidified hydrocarbon of Okada, and direct the humidified hydrocarbon to a polymerization reactor, as taught by Goode, as a preferable way of introducing controlled amounts of humidity into a hydrocarbon.

Okada teaches an analyzer (7) located on the outlet line, but fails to teach an analyzer with a heater and a three-way valve coupled to the outlet.

Birks also discloses an analyzer utilized in a chemical process.

Birks teaches a sampling chamber (51), a three way valve (73), and a heater (78) in a process line (74) of a chemical reactor as a preferable and very well known way of using an online analyzer (chromatograph) to provide continuous analysis of reactor products (and all of which are normal to the art of chromatography, see col. 4 lines 25-28).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the chromatograph, heater and three-way valve of Birks, to the humidification apparatus of modified Okada, in order to provide a continuous method of analyzing the effluent of the humidification vessel.

(10) Response to Argument

Appellant's arguments filed 11/6/08 have been fully considered but they are not persuasive.

Addressing Appellants arguments individually:

B. Regarding the Rejection of claims 17, 18, 20, 21, 26-29, and 34 under 35 U.S.C. § 102(b) as Being Anticipated by Okada (JP 05-171164)

Appellant argues that Okada does not disclose or teach "a disengagement zone, comprising a hydrocarbon monomer having a water content and undissolved water entrained with the hydrocarbon". The examiner respectfully disagrees with this argument. The apparatus of Okada does indeed contain a "disengagement zone". For example, the area above the spray nozzle (9, Fig. 1 of Okada) constitutes a disengagement zone. The water which is sprayed through the spray nozzle 9 is not intended to be sent out through the top of the vessel of Okada. In this area, water is disengaged from the fluid stream which exits the top of Okada. It is the examiner's position that the exact contents of this disengagement zone is a limitation directed toward how the apparatus is operated and does not differentiate the claimed apparatus from the prior art. In other words, the apparatus disclosed by Okada is identical to the apparatus claimed by the appellant (minus the limitations directed toward the materials worked upon in the apparatus) and would be capable of working on those materials.

C. Regarding the Rejection of Claims 31, 36, and 40 Under 35 U.S.C. § 102(b) as Being Anticipated by Holst (U.S. 5,650,128).

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Appellant does not present any additional arguments to that which has already been set forth. Furthermore, apparatus disclosed by Holst is identical to the apparatus claimed by the appellant (minus the limitations directed toward the materials worked upon in the apparatus).

D. Regarding the Rejection of Claim 19 is Unpatentable Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Smith, Jr. (U.S. 5,446,223).

Appellant does not present any additional arguments to that which has already been set forth.

E. Regarding the Rejection of Claim 25 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Yoneda (U.S. 5,123,836).

Appellant does not present any additional arguments to that which has already been set forth.

F. Regarding the Rejection of Claims 22-24, 31, and 32 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Holst.

Appellant does not present any additional arguments to that which has already been set forth.

G. Regarding the Rejection of Claim 30 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Niwa (U.S. 4,705,654).

Appellant does not present any additional arguments to that which has already been set forth.

H. Regarding the Rejection of Claims 33, 38, and 39 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Goode et al. (U.S. 6,111,034).

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Appellant argues that Okada does not teach “a head space in the cavity above the bed which allows liquid water to fall out of the hydrocarbon stream”. The examiner respectfully disagrees with this argument. Okada clearly discloses a head space above the bed (above spray nozzle 9, see Fig. 1 of Okada) which has the ability to allow liquid water to fall out of a fluid stream. In other words, Okada teaches an apparatus that is identical to the claimed apparatus and such language as “allows liquid water to fall out of a hydrocarbon stream” is directed toward a method of operating the claimed “head space” and does not distinguish the claimed apparatus over the prior art.

I. Regarding the Rejection of Claim 39 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Goode et al. (U.S. 6,111,034).

Appellant argues that Okada does not teach “a second vessel coupled to the inlet, wherein the second vessel includes a mono-unsaturated alkene or conjugated diene”. The examiner respectfully disagrees with this argument. Okada does indeed teach a second vessel coupled to the inlet (mixer 6). The material which is contained in this vessel does not distinguish the claimed apparatus from the prior art.

J. Regarding the Rejection of Claim 35 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Goode et al. (U.S. 6,111,034).

Appellant does not present any additional arguments to that which has already been set forth.

K. Regarding the Rejection of Claim 37 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Holst and in Further View of Goode et al.

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Appellant does not present any additional arguments to that which has already been set forth.

L. Regarding the Rejection of Claims 41 and 42 Under 35 U.S.C. § 103(a) as Obvious Over Okada in View of Goode, and in Further View of Birks et al. (U.S. 4,847,207).

Appellant does not present any additional arguments to that which has already been set forth.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/M. J. M./

Examiner, Art Unit 1795

January 6, 2008

Conferees:

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795

/Jennifer Michener/

QAS, TC1700